

Analysis of the Temperature Dependence of Diode Ideality Factor in InGaN-Based UV-A Light-Emitting Diode

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The temperature dependence of diode ideality factor in InGaN-based UV-A light-emitting diode has been investigated using the current–voltage characteristics at different temperatures. The obtained values of diode ideality factor are found to increase from 2.252 to 7.79 due to cooling down the device from 350 to 77 K. The evaluated values of diode ideality factors (even at high temperature) are greater than the expected values lying between unity to two. An attempt has been made to elucidate such greater value of diode ideality factor by existing theories as well as its effect on the diode characteristics.

Keywords: InGaN UV LED, diode ideality factor, tunnelling current, current crowding effect.

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